

Notice of Allowability

Application No.

10/011,004

Examiner

Matthew C. Sams

Applicant(s)

HANSEN ET AL.

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 8/21/2006.
2. ☒ The allowed claim(s) is/are 1,3-16,18-25 and 27-40.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____

EXAMINER'S AMENDMENT

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Bruce E. Stuckman (36,693) on 9/11/2006 & 9/15/2006.

The application has been amended as follows:

Claim 1. (currently amended) A method for dynamic frequency selection in a wireless communication network, the method comprising:

determining, by an access point, interference on a current wireless channel of a plurality of wireless channels by:

transmitting a holding packet on the current wireless channel, wherein the holding packet addresses an invalid wireless station; and

measuring the interference on the current wireless channel during a transmit period allocated to the invalid wireless station;

when the interference on the current wireless channel exceeds an interference threshold, providing, by the access point, a request packet that requests channel spectrum information to at least one affiliated wireless station via the current wireless channel;

generating, by the at least one affiliated wireless station, the channel spectrum information of the plurality of wireless channels;

providing, by the at least one affiliated wireless station, the channel spectrum information to the access point via the current wireless channel;

interpreting, by the access point, the channel spectrum information to determine a desired wireless channel of the plurality of wireless channels; and

providing, by the access point, a selection packet to the at least one affiliated wireless station via the current wireless channel, wherein the selection packet indicates that the access point will change to the desired wireless channel at a future time.

Claim 3. (currently amended) The method of claim 1, wherein the providing the request packet by the access point further comprises at least one of:

polling the at least one affiliated wireless station;

enabling a periodic generation of the channel spectrum information; and

enabling a spontaneous generation of the channel spectrum information.

Claim 4. (currently amended) The method of claim 1, wherein the generating the channel spectrum information by the at least one affiliated wireless station further comprises:

for at least some of the plurality of wireless channels:

tuning to the each of the at least some of the plurality of wireless channels;

measuring interference on the each of the at least some of the plurality of wireless channels to produce channel interference data; and

compiling the channel interference data of each of the at least some of the plurality of wireless channels to produce the channel spectrum information.

Claim 9. (currently amended) The method of claim 1, wherein the determining that the interference exceeds the interference threshold by the access point further comprises:

determining that the interference on the current wireless channel exceeds a first interference threshold;

providing an increase power packet that indicates an increased transmit power level to the at least one affiliated wireless station;

determining that the interference on the current wireless channel with the at least one affiliated wireless station transmitting packets using the increased transmit power level still exceeds the first threshold, and

when the interference on the current wireless channel with the at least one affiliated wireless station transmitting packets using the increased transmit power level still exceeds the first threshold, generating by the access point, the request packet.

Claim 10. (currently amended) A method for an access point to dynamically select a frequency within a wireless communication network, the method comprising:

determining interference on a current wireless channel of a plurality of wireless channels by transmitting a holding packet on the current wireless channel, wherein the holding packet addresses an invalid wireless station, and measuring the interference on

the current wireless channel during a transmit period allocated to the invalid wireless station;

obtaining channel spectrum information from at least one affiliated wireless station via a the current wireless channel of a plurality of wireless channels, wherein the channel spectrum information indicates level interference on at least some of the plurality of wireless channels within the channel spectrum;

interpreting the channel spectrum information to determine a desired wireless channel of the plurality of wireless channels; and

providing a packet to the at least one affiliated wireless station via the current wireless channel, wherein the packet indicates that the access point will change to the desired wireless channel at a particular future time ~~and includes the particular future time.~~

Claim 15. (currently amended) The method of claim 10, wherein the interpreting the channel spectrum information further comprises:

determining that interference on the current wireless channel exceeds a first interference threshold;

providing an increase power packet that indicates an increased transmit power level to at least one affiliated wireless station;

determining that the interference on the current wireless channel with the at least one affiliated wireless station transmitting packets using the increased transmit power level still exceeds the first threshold, and

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when the interference on the current wireless channel with the at least one affiliated wireless station transmitting packets using the increased transmit power level still exceeds the first threshold, generating, by the access point, the request packet.

Claim 16. (currently amended) A wireless communication network that includes a plurality of basic service sets, wherein each of the plurality of basic service sets comprises:

- an access point (AP); and

- a plurality of wireless stations, wherein the access point includes an AP processing module and an AP memory, wherein the AP memory further includes operational instructions that cause the AP processing module to:

 - determine interference on a current wireless channel of a plurality of wireless channels by:

 - transmitting a holding packet on the current wireless channel, wherein the holding packet addresses an invalid wireless station; and

 - measuring the interference on the current wireless during a transmit period allocated to the invalid wireless station;

 - when the interference on the current wireless channel exceeds an interference threshold, provide a request packet that requests channel spectrum information to at least one affiliated wireless station of the plurality of wireless stations via the current wireless channel;

interpret the channel spectrum information to determine a desired wireless channel of the plurality of wireless channels;

provide a selection packet to the at least one affiliated wireless station via the current wireless channel, wherein the selection packet indicates that the access point will change to the desired wireless channel at a future time, and

wherein each of the plurality of wireless stations (STA) includes a STA processing module and STA memory, wherein the STA memory includes operational instructions that cause the STA processing module to:

generate, as the at least one affiliated wireless station, the channel spectrum information of at least some of the plurality of wireless channels;

provide, as the at least one affiliated wireless station, the channel spectrum information to the access point via the current wireless channel.

Claim 18. (currently amended) The wireless communication network of claim 16, wherein the AP memory further comprises operational instructions that cause the AP processing module to provide the request packet by at least one of:

polling the at least one affiliated wireless station;

enabling a periodic generation of the channel spectrum information; and

enabling a spontaneous generation of the channel spectrum information.

Claim 19. (currently amended) The wireless communication network of claim 16, wherein the STA memory of the at least one affiliated wireless station further comprises

operational instructions that cause the STA processing module of the at least one affiliated wireless station to generate the channel spectrum information by:

- for the at least some of the plurality of wireless channels:
- tuning to each of the at least some of the plurality of wireless channels;
- measuring interference on the each of the at least some of the plurality of wireless channels to produce channel interference data; and
- compiling the channel interference data of the each of the at least some of the plurality of wireless channels to produce the channel spectrum information.

Claim 24. (currently amended) The wireless communication network of claim 16, wherein the AP memory further comprises operational instructions that cause the AP processing module to determine that the interference exceeds the interference threshold by:

- determining that the interference on the current wireless channel exceeds a first interference threshold;

- providing an increase power packet that indicates an increased transmit power level to the at least one affiliated wireless station;

- determining that the interference on the current wireless channel with the at least one affiliated wireless station transmitting packets using the increased transmit power level still exceeds the first threshold, and

when the interference on the current wireless channel with the at least one affiliated wireless station transmitting packets using the increased transmit power level still exceeds the first threshold, generating, by the access point, the request packet.

Claim 25. (currently amended) An access point for use in a wireless communication network, the access point comprises:

an AP processing module; and

an AP memory, wherein the AP memory further includes operational instructions that cause the AP processing module to:

determine interference on a current wireless channel of a plurality of wireless channels by transmitting a holding packet on the current wireless channel, wherein the holding packet addresses an invalid wireless station, and measuring the interference on the current wireless channel during a transmit period allocated to the invalid wireless station;

when the interference on the current wireless channel exceeds an interference threshold, provide a request packet that requests channel spectrum information to at least one affiliated wireless station of a plurality of wireless stations via the current wireless channel;

interpret the channel spectrum information to determine a desired wireless channel of the plurality of wireless channels; and

provide a selection packet to the at least one affiliated wireless station via the current wireless channel, wherein the selection packet indicates that the

access point will change to the desired wireless channel at a particular future time and includes the particular future time.

Claim 26. (cancelled)

Claim 27. (currently amended) The access point of claim 25, wherein the AP memory further comprises operational instructions that cause the AP processing module to provide the request packet by at least one of:

- polling the at least one affiliated wireless station;
- enabling a periodic generation of the channel spectrum information; and
- enabling a spontaneous generation of the channel spectrum information.

Claim 33. (currently amended) A wireless station for use in a wireless communication network, the wireless station comprises:

- STA processing module; and
- STA memory, wherein the STA memory includes operational instructions that cause the STA processing module to:

- receive a request packet from an access point via a current wireless channel that requests channel spectrum information, wherein the request packet is transmitted by the access point in response to the access point determining interference on the current wireless channel by transmitting a holding packet on the current wireless channel, wherein the holding packet addresses an invalid

wireless station, and measuring the interference on the current wireless channel during a transmit period allocated to the invalid wireless station;

generate, as an affiliated wireless station of an access point of the wireless communication network, the channel spectrum information of at least some of the plurality of wireless channels;

provide, as the affiliated wireless station, the channel spectrum information to the access point via the current wireless channel; and

receive, from the access point, a packet that indicates that the access point will change to the desired wireless channel at a particular future time and includes the particular future time.

Claim 35. (currently amended) An access point to dynamically select a frequency within a wireless communication network, the access point comprises:

AP processing module; and

AP memory that includes operational instructions that cause the AP processing module to:

determine interference on a current wireless channel of a plurality of wireless channels by transmitting a holding packet on the current wireless channel, wherein the holding packet addresses an invalid wireless station, and measuring the interference on the current wireless channel during a transmit period allocated to the invalid wireless station;

obtain channel spectrum information from at least one affiliated wireless station via ~~at~~the current wireless channel of a plurality of wireless channels, wherein the channel spectrum information indicates level interference on at least some of the plurality of wireless channels within the channel spectrum;

interpret the channel spectrum information to determine a desired wireless channel of the plurality of wireless channels; and

provide a packet to the at least one affiliated wireless station via the current wireless channel, wherein the packet indicates that the access point will change to the desired wireless channel at a particular future time ~~and includes the particular future time.~~

Claim 40. (currently amended) The access point of claim 35, wherein the AP memory further comprises operational instructions that cause the AP processing module to interpret the channel spectrum information by:

determining that interference on the current wireless channel exceeds a first interference threshold;

providing an increase power packet that indicates an increased transmit power level to at least one affiliated wireless station;

determining that the interference on the current wireless channel with the at least one affiliated wireless station transmitting packets using the increased transmit power level still exceeds the first threshold, and

when the interference on the current wireless channel with the at least one affiliated wireless station transmitting packets using the increased transmit power level still exceeds the first threshold, generating, by the access point, the request packet.

Examiner's Statement of Reasons for Allowance

2. Claims 1, 3-16, 18-25 and 27-40 are allowed.
3. The following is an examiner's statement of reasons for allowance:

Applicant's invention is drawn to a method and system for dynamic frequency selection in a wireless communication network where the access point determines the interference on a plurality of wireless channels by transmitting a packet addressed to an invalid station, measuring the interference of the wireless channel when the invalid wireless station is supposed to transmit; if the measured interference exceeds a threshold set by the access point, the access point requests channel spectrum information from an affiliated wireless station, generating and transmitting the spectrum information to the access point, having the access point interpret the channel spectrum information and having the access point transmit a selection packet on the current wireless channel, information including the future time that the access point will change to a desired wireless channel.

Applicant's independent claims 1, 10, 16, 25 & 35 each recite, *inter alia*, a method or system for dynamic frequency selection in a wireless communication network comprising an access point, which determines interference on a current wireless channel of a plurality of wireless channels by transmitting a holding packet on the

current wireless channel, wherein the holding packet addresses an invalid wireless station, measuring the interference on the current wireless channel during a transmit period allocated to the invalid wireless station, when the interference on the current wireless channel exceeds an interference threshold, providing by the access point, a request packet that requests channel spectrum information to at least one affiliated wireless station via the current wireless channel, generating by the at least one affiliated wireless station, the channel spectrum information of the plurality of wireless channels, providing, by the at least one affiliated wireless station, the channel spectrum information to the access point via the current wireless channel, interpreting by the access point, the channel spectrum information to determine a desired wireless channel of the plurality of wireless channels and providing by the access point, a selection packet to the at least one affiliated wireless station via the current wireless channel, wherein the selection packet indicates that the access point will change to the desired wireless channel at a future time. Applicant's claims 1, 10, 16, 25 & 35 comprise a particular combination, which is neither taught nor suggested by the prior art.

Applicant's independent claim 33 recites, *inter alia*, a wireless station for using in a wireless communication network, the wireless station comprises a processing module, station memory that includes operational instructions that cause the wireless station processing module to receive a request packet from an access point via a current wireless channel, that requests channel spectrum information, wherein the request packet is transmitted by the access point in response to the access point determining interference on the current wireless channel by transmitting a holding packet on the

current wireless channel, wherein the holding packet addresses an invalid wireless station, and measuring the interference on the current wireless channel during a transmit period allocated to the invalid wireless station, generating as an affiliated wireless station of an access point of the wireless communication network, the channel spectrum information of at least some of the plurality of wireless channels, providing as the affiliated wireless station, the channel spectrum information to the access point via the current wireless channel and receiving from the access point, a packet that indicates that the access point will change to the desired wireless channel at a particular future time and includes the particular future time. Applicant's claim 33 comprises a particular combination, which is neither taught nor suggested by the prior art.

Accordingly, Applicant's claims are allowed for these reasons and for the reasons recited by the Applicant in the amendments filed on 7/7/2005, 11/23/2005, 4/25/2006 and 8/21/2006.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Matthew C. Sams whose telephone number is (571)272-8099. The examiner can normally be reached on M-F 7:30-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lester Kincaid can be reached on (571)272-7922. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

MCS
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